ZNET.099A PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant : Nigel Green

Appl. No. : 10/720,712

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For : DEFERRED AND OFF-LOADED RENDERING OF SELECTED PORTIONS OF WEB PAGES TO INCORPORATE LATE-ARRIVING SERVICE DATA

Examiner : Lin Liu

Confirmation No. 5376

SECOND APPEAL BRIEF

United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

This Second Appeal Brief is being filed in response to the final Office Action dated August 5, 2010 (the "Final Office Action").

I. REAL PARTY IN INTEREST

The real party in interest in the present application is Amazon Technologies, Inc., which is the assignee of the application and is a subsidiary of Amazon.com, Inc.

II. RELATED APPEALS AND INTERFERENCES

An appeal is currently pending in U.S. Appl. No. 11/182,502. The '502 application was filed on July 15, 2005, and shares a common inventor with the present application.

III. STATUS OF CLAIMS

Claims 1-31, 33-43, 49-55 and 57-71, which are included in the appendix, are currently pending in the application and are the subject of this appeal. All of these claims stand rejected. Claims 32, 44-48, and 56 are canceled.

IV. STATUS OF AMENDMENTS

An after-final amendment was filed on September 22, 2010 to correct typographical errors discovered in claims 37 and 41.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present application includes four independent claims – claim 1, claim 18, claim 27 and claim 52. Each independent claim is summarized below, with citations (in bold, bracketed text) to corresponding portions of the specification and drawings as required by 37 C.F.R. § 41.37(c)(1)(v). These citations illustrate specific examples and embodiments of the recited claim language, and do not limit the claims. Except where indicated otherwise, the cited reference numbers refer to events and other items shown in Figure 2, which is reproduced below.

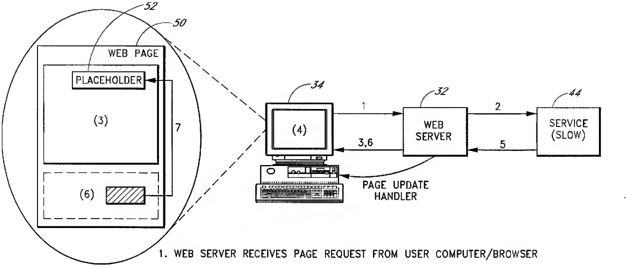

FIG. 2

1. WEB SERVER RECEIVES PAGE REQUEST FROM USER COMPUTER/BROWSER
2. WEB SERVER REQUESTS DATA FROM SERVICE
3. WEB SERVER RETURNS INITIAL PORTION OF REQUESTED PAGE (3) WITH "PLACEHOLDER"
4. USER BEGINS TO REVIEW PAGE
5. SERVICE RETURNS REQUESTED DATA
6. WEB SERVER RETURNS UPDATE PORTION OF PAGE (6) WITH FORMATTED SERVICE DATA AND CALL TO PAGE UPDATE HANDLER
7. PAGE UPDATE HANDLER RUNNING IN BROWSER REPLACES OR REPOPULATES PLACEHOLDER WITH SERVICE DATA RETURNED IN STEP 6

Claim 1

Claim 1 is directed to a method of dynamically generating and serving web pages [***see, e.g.*, page 2, ¶ 0005**]. The method comprises at least the following:

- receiving a page request **[event 1]** at a server **[32]**, the page request generated by a web browser **[38 in Fig. 1]** running on a user computer **[34]** and corresponding to a web page **[50]** that is generated dynamically [***see, e.g.*, page 2, lines 6-10 of ¶ 0005; and page 6, first 2 lines of ¶ 0023**];
- in response to the page request, sending a service request **[event 2]** from the server **[32]** to a service **[44]** to request service data to incorporate into the web page [***see, e.g.*, page 6, lines 2-4 of ¶ 0023; Fig. 5, block 64; and page 14, last 3 lines of ¶ 0054**];
- before the service returns the service data, transmitting a first portion **[(3)]** of the web page **[event 3]** from the server **[32]** to the user computer **[34]** for display by the web browser, said first portion **[(3)]** including viewable content that is viewable on the user computer **[34]** while the service request is pending **[event 4]**, and including a placeholder

[52] for the requested service data, said first portion transmitted to the user computer while said service request is pending [*see, e.g.*, **page 2, last 8 lines of ¶ 0005**; **¶¶ 0025-0028 on pages 6-7; pages 9-10, ¶ 0037; pages 10-11, ¶ 0040; and Fig. 5, block 68]**;

- after the service returns the service data **[event 5]** and before the web page has been fully loaded, transmitting from the server **[32]** to the user computer a second portion **[(6)]** of the web page **[event 6]**, the second portion including the service data [*see, e.g.*, **page 2, first 3 lines of ¶ 0006; page 7, ¶ 0028 and first 8 lines of ¶ 0029; page 9, ¶ 0034; and Fig. 5, block 72]**; and
- transmitting to the user computer **[34]** a page update handler **[see arrow labeled "page update handler" in Fig. 2]** which, when executed by the web browser **[event 7]**, incorporates the service data included within the second portion **[(6)]** of the web page **[50]** into the first portion **[(3)]** of the web page in a viewable format to complete the web page [*see, e.g.*, **page 2, first 6 lines of ¶ 0005; page 2, first 3 lines of ¶ 0006; page 6, ¶¶ 0019-21; last 3 lines of ¶ 0028 on page 7; last 2 lines of ¶ 0029 on pages 7 and 8; page 8, ¶ 0030; and Figs. 3A and 3B, elements 52A and 52B; and ¶¶ 0044-45 on pages 11-12]**;
- whereby the method enables an incomplete version of the requested web page to be viewed on the user computer while the service data is being retrieved [*see, e.g.*, **¶ 0027 on page 7; ¶ 0030 on page 8; Figs. 3A and 3B, elements 52A and 52B; and ¶¶ 0044-45 on pages 11-12]**.

Claim 18

Claim 18 is directed to a method of responding to a request from a web browser for a web page. The method comprises at least the following:

- sending a service request **[event 2]** to a service **[44]** to request service data to be displayed within a portion **[(3)]** of the web page, said service request sent to the service in response to the request for the web page, and before the requested web page is transmitted to the web browser [*see, e.g.*, **page 6, lines 2-4 of ¶ 0023; events 2 and 3 of Fig. 2; Fig. 5, blocks 64-68; and page 14, last 3 lines of ¶ 0054]**;

- determining whether the service **[44]** returns the requested service data within a selected time interval [***see, e.g.*****, first 5 lines of ¶ 0007 on page 2; Fig. 5, blocks 74 and 78; and last 6 lines of ¶ 0057 on p. 15]**;
- when the service **[44]** returns the requested service data within the selected time interval, populating said portion **[(3)]** of the web page **[50]** with the service data prior to transmitting the web page to the web browser [***see, e.g.*****, first 5 lines of ¶ 0007 on page 2; first 11 lines of ¶ 0040 on page 10; Fig. 5, blocks 74-78; first 6 lines of ¶ 0057 on page 15]** ; and
- when the service **[44]** does not return the requested service data within the selected time interval: (a) transmitting at least said portion **[(3)]** of the web page **[50]** to the web browser without the service data while the service request is pending **[event 3]**, to thereby enable an incomplete version of the web page to be displayed by the web browser while the service data is being retrieved, (b) in response to receiving the requested service data from the service **[44]**, transmitting the service data to the web browser **[events 5 and 6]**, and (c) invoking a page update handler **[event 6]** which, when executed by the web browser **[event 7]**, populates said portion **[(3)]** of the web page **[50]** with the service data transmitted in (b) [***see, e.g.*****, page 2, ¶¶ 0005-0007; page 6, ¶¶ 0025-0030; Figs. 3A and 3B, elements 52A and 52B; ¶¶ 0044-45 on pages 11-12; Figs. 4A and 4B; Fig. 5, blocks 68-72 and 78; last 4 lines of ¶ 0057 on page 15]**;
- wherein the method is performed by a server system that comprises one or more physical servers **[*****see, e.g.*** **page 2, ¶ 0005; and pages 3 and 4, ¶ 0015]**

<u>Claim 27</u>

Claim 27 is directed to a method of generating a web page **[50]** in response to a request from a web browser, the method comprising:

(a) sending a service request **[event 2]** to a service **[44]** to request service data to be displayed in the web page [***see, e.g.*****, page 6, lines 2-4 of ¶ 0023; Fig. 5, block 64; and page 14, last 3 lines of ¶ 0054]**;

(b) while the service request is pending, transmitting to the web browser at least a first portion **[(3)]** of the web page **[event 3]**, said first portion **[(3)]** including content that is viewable within the web browser **[event 4]** while the service data is being retrieved [***see, e.g.*, page 2, last 8 lines of ¶ 0005; page 6, ¶ 0025; page 7, ¶ 0027 and first 3 lines of ¶ 0028; pages 9-10, ¶ 0037; Figs. 3A and 3B, elements 52A and 52B; ¶¶ 0044-45 on pages 11-12; and Fig. 5, block 64-68**];

(c) after the service **[44]** responds to the service request by returning the service data **[event 5]**, sending the service data **[event 6]** to the web browser [***see, e.g.*, page 2, first 3 lines of ¶ 0006; and page 7, ¶ 0028**]; and

(d) instructing the web browser to execute a page update handler that, when executed **[event 7]**, incorporates a viewable representation of the service data, as transmitted in (c), into the first portion **[(3)]** of the web page to complete the web page [***see, e.g.*, page 2, first 6 lines of ¶ 0005; page 6, ¶ 0019; page 8, ¶ 0030; Figs 3A and 3B, elements 52A and 52B; ¶¶ 0044-45 on pages 11-12; and Fig. 5, block 72**];

wherein the method, including (a), (b), (c) and (d), is performed by a web server system that comprises one or more physical servers [***see, e.g.* page 2, ¶ 0005; and pages 3 and 4, ¶ 0015**], and the method enables a user to view an incomplete version of the web page while the service data is being retrieved [***see, e.g.*, ¶ 0027 on page 7; ¶ 0030 on page 8; Figs. 3A and 3B, elements 52A and 52B; and ¶¶ 0044-45 on pages 11-12**].

Claim 52

Claim 52 is directed to a system for responding to web page requests. The system comprises at least the following:

- a web server system that comprises one or more physical servers [***see, e.g.* page 2, ¶ 0005; and pages 3 and 4, ¶ 0015**], said web server system responsive to page requests from browsers **[38 in Fig. 1]** running on user computing devices **[34]** by generating and serving web pages **[50]** that include data retrieved from one or more services **[44]**, said web server system operative to respond to a request from a browser for a web page according to a process that comprises:

- sending a service request **[event 2]** to a service **[44]** to request service data to be displayed in the web page [***see, e.g.*****, page 6, lines 2-4 of ¶ 0023; Fig. 5, block 64; and page 14, last 3 lines of ¶ 0054]**;
- while the service request is pending, transmitting to the browser at least a first portion **[(3)]** of the web page **[event 3]**, said first portion including content that is viewable with the browser while the service data is being retrieved [***see, e.g.*****, page 2, last 8 lines of ¶ 0005**; **page 6, ¶ 0025; page 7, ¶ 0027 and first 3 lines of ¶ 0028; pages 9-10, ¶ 0037; Figs. 3A and 3B, elements 52A and 52B; ¶¶ 0044-45 on pages 11-12; and Fig. 5, block 64-68]**;
- after the service responds to the service request by returning the service data **[event 5]**, sending the service data **[event 6]** to the browser [***see, e.g.*****, page 2, first 3 lines of ¶ 0006; and page 7, ¶ 0028]**; and
- causing the browser to execute a page update handler **[events 6 and 7]** that, when executed, causes a viewable representation of the service data to be incorporated into the first portion **[(3)]** of the web page to complete the web page [***see, e.g.*****, page 2, first 6 lines of ¶ 0005; page 6, ¶ 0019; page 7, ¶ 0027; page 8, ¶ 0030; Figs. 3A and 3B, elements 52A and 52B; and ¶¶ 0044-45 on pages 11-12; and Fig. 5, block 72]**.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following issues are presented on appeal:

1. Whether claims 1-6, 8-14, 16-31, 33-37, 39-43, 49-55, 57-60 and 62-71 are properly rejected under 35 U.S.C. § 103(a) over Hayton (U.S. Pat. 7,051,084) in view of Miller (U.S. Pub. 2003/0040970).

2. Whether claim 7 is properly rejected under 35 U.S.C. § 103(a) over Hayton in view of Miller and further in view of Starkey (U.S. Pub. 2002/0059327).

3. Whether claims 15, 38 and 61 are properly rejected under 35 U.S.C. § 103(a) over Hayton in view of Miller and further in view of Samar (U.S. Pat. 6,563,514).

VII. ARGUMENT

For the reasons explained below, the rejections under § 103 are improper. By declining to separately argue certain dependent claims, Appellant does not imply that the features recited in these claims are taught or suggested by the cited art. In addition, no admission is made that any of the references constitutes "prior art."

1. Claims 1-6, 8-14, 16-31, 33-37, 39-43, 49-55, 57-60 and 62-71 are not rendered obvious by Hayton and Miller.

Claims 1-6, 8-14, 16-31, 33-37, 39-43, 49-55, 57-60 and 62-71 stand rejected as unpatentable over Hayton in view of Miller. All of the pending independent claims are in this group.

"The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. ... [R]ejections on obviousness cannot be sustained with mere conclusory statements." M.P.E.P. § 2142, 8th Ed., Rev. 6 (Sept. 2007) (internal citation and inner quotation omitted).

As explained below, the rejections are improper because (1) Hayton and Miller do not collectively teach or suggest the subject matter of any claim, and (2) the Final Office Action does not identify a motivation to combine Hayton and Miller. Each independent claim and several dependent claims are discussed below.

<u>Discussion of the references</u>

Hayton discloses a process for (1) regenerating a portion of a web page after the page has been transmitted from the server to the user's computer for display, and (2) updating the display of the page on the user computer by replacing the original portion with the regenerated portion. For example, if a page transmitted to the user's computer displays stock quotes, the portion containing the stock quotes can be regenerated on the server to reflect changed quotes. This new portion can then be sent to the user's computer and displayed on the already-rendered page in place of the outdated portion. Thus, the process enables the page, as rendered on the user's computer, to be updated without regenerating the entire page. *See* Hayton at, *e.g.*, the abstract; col. 2, lines 3-15; col. 6, lines 1-7; col. 6, lines 38-54; and col. 12, line 50 to col. 13, line 21.

Hayton does not disclose or suggest a process in which the server transmits a portion of the requested page to the user's computer while the server is waiting for requested data that is to be incorporated onto the page. Thus, when a page is initially requested in Hayton, the user apparently cannot begin to review any portion of the page until after the server has retrieved all of the data for generating the page. For example, if five seconds elapse before the requested data (e.g., a set of stock quotes) becomes available to the server, the user will apparently experience at least a five-second delay before the requested page will begin to appear. Although Hayton's process for subsequently updating the displayed page may involve transmitting selected portions of the page (namely those that have changed), this updating process does not address this display latency issue.

Miller discloses a system for managing online classified ads. Miller does not disclose a process for updating the display of a web page, and does not overcome the above-noted "display latency" deficiency in Hayton. Although the Final Office Action purports to reject all of the independent claims over Hayton in view of Miller, the Final Office Action apparently does not rely on Miller in connection with any portion of independent claims 1, 27 and 52.

Independent Claim 1

Claim 1 reads as follows, with emphasis (italics) added for purposes of discussion:

> A method of dynamically generating and serving web pages, the method comprising:
>
> receiving a page request at a server, the page request generated by a web browser running on a user computer and corresponding to a web page that is generated dynamically;
>
> in response to the page request, sending a service request from the server to a service to request service data to incorporate into the web page;
>
> *before the service returns the service data, transmitting a first portion of the web page from the server to the user computer for display by the web browser, said first portion including viewable content that is viewable on the user computer while the service request is pending, and including a placeholder for the requested service data, said first portion transmitted to the user computer while said service request is pending*;
>
> after the service returns the service data and *before the web page has been fully loaded, transmitting from the server to the user computer a second portion of the web page, the second portion including the service data*; and
>
> transmitting to the user computer a page update handler which, when executed by the web browser, incorporates the service data included

> within the second portion of the web page into the first portion of the web page in a viewable format *to complete the web page*;
>
> whereby *the method enables an incomplete version of the requested web page to be viewed on the user computer while the service data is being retrieved.*

As a preliminary matter, although claim 1 stands rejected over Hayton in view of Miller, the Examiner apparently does not rely on Miller in connection with any portion of claim 1. In this regard, the Examiner relies on Miller only in connection with a feature that does not appear in claim 1, namely the feature of waiting a selected time interval. *See* Final Office Action at page 1, lines 1-6.

The rejection of claim 1 is improper at least because Hayton and Miller do not collectively teach or suggest the italicized portions of claim 1 in the context of the claim's other recitations.

In connection with the first italicized portion ("before the service returns the service data, transmitting … while the service request is pending"), the Final Office Action points to Figure 2b; col. 5, lines 29-50; and col. 6, lines 26-54 of Hayton. Final Office Action at page 2, last 2 lines and page 2, first 5 lines. The referenced portions of Hayton are reproduced below.

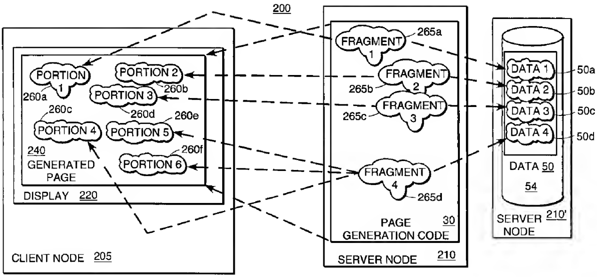

FIG. 2b

> The display alterer 245 is in communication with the client transceiver 230 for transmitting requests to the server node 210 for an update of a web page 240.

The display alterer 245 also receives the web page 240 or portions of the web page 240 sent from the server node 210 through the client transceiver 230. The display alterer 245 is in communication with the display 220 for displaying the web page 240 or for incorporating received updated portions of the web page 240 into the currently displayed web page 240. The display alterer 245 is in communication with the storage buffer 225 for temporarily storing web page data needed for the incorporation of the received updated portions of the web page 240. The storage buffer 225 can include persistent and/or volatile storage.

The server nodes 210 and 210' can be any computing device capable of providing the requested services of the client node 205, particularly generating and transmitting portions of the transmitted web page 240. It is to be understood that more or fewer servers than those shown in FIG. 2a can be connected to the network 215. In one embodiment, the server nodes 210 and 210' are two separate computing devices. In another embodiment, the server nodes 210 and 210' are a single computing device. Either implementation is equivalent for practicing the principles of the invention, and thus the reference to a server node 210 hereafter represents either configuration or another equivalent configuration.

* * *

FIG. 2b also illustrates an example of the correspondences between code fragments 265 of the page generation code 30 and the corresponding data 50a, 50b, 50c, 50d (generally referred to as 50) upon which the code fragments 265 depend. In other words, the data 50 upon which the code fragments 265 depend is the data 50 that the code fragment 265 uses to generate the corresponding page portion 260. Though the embodiment shown has one data element (e.g., 50a) for one fragment (e.g., 265a), this relationship can vary. For example, one code fragment may depend on several data elements, and one data element may be have many code fragments dependent on it.

Referring back to FIG. 2a, the partial page regenerator 250 is in communication with the server transceiver 235 for receiving requests from the client node 205 to refresh the web page 240. The partial page regenerator 250 transmits the web page 240, or portions 260 of the web page 240, to the server transceiver 235 in response to such requests, for transmission to the client node 205. The partial page regenerator 250 is in communication with the page generation code 30 for executing code fragments 265 of the page generation code 30 to create corresponding page portions 260 of the web page 240. The partial page regenerator 250 also determines the data 50 in the storage buffer 54 that the code fragments 265 use to generate the corresponding page portions 260. The partial page regenerator 250 is in communication with the data change monitor 255 to receive notice of any change in the data 50 in the storage buffer 54 upon which the code fragments 265 depend.

Although the referenced portions of Hayton disclose the transmission of specific portions of a page (namely those that have changed), they never suggest "transmitting a first portion of the web page from the server to the user computer for display ... *while said service request is pending*" as claimed (emphasis added). In addition, they do not suggest such a transmission "before the service returns the [requested] service data," and do not suggest that the transmitted portion includes "a placeholder for the requested service data." Further, the referenced portions of Hayton do not suggest "said first portion including viewable content that is viewable on the user computer while the service request is pending" in the context of the other recitations of the claim.

In connection with these issues, the Examiner states the following: "before the latest data update is being return [sic] back from the server node 210' to the client, the first portion of viewable page is displayed to the client." Final Office Action page 3, lines 4 and 5. This statement does not address the above-quoted recitations of claim 1. For example, even if, *arguendo*, the Examiner's statement is accurate, it does not follow that any portion of the page is transmitted "while said service request pending" as claimed, or that "a placeholder for the requested service data" is included in a transmitted portion.

In connection with the second highlighted portion of claim 1 (namely "before the web page has been fully loaded, transmitting from the server to the user computer a second portion of the web page, the second portion including the service data"), the Final Office Action at page 3 points to col. 12, lines 50-65 and col. 13, lines 6-50 of Hayton. These portions of Hayton describe the process by which a regenerated portion of the web page is used to update the display of the page. Nothing in these or any other portions of Hayton suggests that this regenerated portion is transmitted "before the web page has been fully loaded" as claimed. Thus, the referenced portions of Hayton do not support the rejection.

In connection with the third and fourth highlighted portions of claim 1 (namely "to complete the web page" and "the method enables an incomplete version of the requested web page to be viewed on the user computer while the service data is being retrieved"), the Examiner points to various portions of Hayton. Final Office Action at page 3. In addition, the Examiner states the following:

> "...upon updating and populating the portion data 50, the web page becomes completed. This suggests that the web page was incomplete before the data is updated."

Appellants respectfully disagree with this characterization. The referenced and other portions of Hayton only describe use cases in which the requested page is apparently generated to completion (i.e., no requested data or content is omitted) before it is transmitted to and displayed on the user's computer. The mere fact that the page may later be updated with new data does not make the original page "incomplete." Thus, Hayton's process does not enable "an incomplete version of the requested web page to be viewed on the user computer while the service data is being retrieved" as claimed. In addition, Hayton's process of later updating the page does not "complete the web page" as claimed.

Finally, to the extent the Examiner may be relying on Miller in connection with claim 1, the rejection is improper because the Final Office Action does not identify a motivation for combining Hayton and Miller. In connection with this issue, the Final Office Action at page 4 points to paragraph 40 of Miller, and states that Miller is in "the same field of endeavor." Neither paragraph 40 nor any other portion of Miller, however, teaches the updating of a displayed web page. In this regard, the "updates" referenced in paragraph 40 of Miller are updates to a database, and not updates to a display of a page. Thus, one skilled in the art would not have considered adding the referenced teaching of Miller to Hayton.

In view of the forgoing, the Final Office Action does not establish a prima facie case of obviousness with respect to claim 1.

Dependent claims 2, 3, 5, 6, 11-14, 17, 49 and 67

Claims 2, 3, 5, 6, 11-14, 17, 49, and 67 depend directly or indirectly from, and stand or fall with, claim 1.

Dependent Claim 4

The rejection of claim 4 is improper in view of the claim's dependency from claim 1. In addition, the rejection of claim 4 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 4: "the service data is included in the second portion of the web page in a condensed form in which at least some format coding is omitted, and the page update handler adds format coding to the service data to format the service data for display, whereby a quantity of data transmitted to the web browser is reduced."

The Final Office Action at page 4 points to col. 13, lines 6-50 of Hayton in connection with this feature. Although the referenced text discloses replacing a portion of a page with "newly transmitted HTML output," it never suggests that this newly transmitted HTML output is "in a condensed form in which at least some format coding is omitted." Thus, the referenced portion of Hayton does not support the rejection.

Dependent Claim 8

The rejection of claim 8 is improper in view of the claim's dependency from claim 1. In addition, the rejection of claim 8 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 8: "the placeholder for the requested service data is included within the first portion of the web page in response to a failure of the service to return the service data within a selected time interval." The Final Office Action at page 5 points to paragraphs 40 and 41 of Miller in connection with this feature. The referenced paragraphs of Miller are reproduced below:

> [0040] The baton mechanisms for the update conversation with DB Home Site server are substantially similar to those described above. In this case, the Ad Update data is transferred by the Merchant Site server to the DB Home Site server via HTTP POST request as POST data (object output streams), rather than via FTP. The DB Home Site server receives the HTTP update request and forwards this to an update servlet (UpdateManager) running on the DB Home Site server. Update Manager creates and adds to a local store the pending update requests received from Merchant Site server and accumulates them over a preset period of time for all merchants who have invoked the update process since the last update. When the accumulation period has elapsed, Update Manager requests the DB Manager component of the DB Home Site server to create and execute the SQL statements needed to effect the updates. The DB Manager opens a connection to DB Server and executes the update procedure. As part of the update process, customized images for graphic elements are generated using customizing data contained in the data objects accompanying the update request. These images are then encoded and saved in a file format suitable for display by a standard Internet browser. The ad set assembly servlet of DBHome inserts the image file names in <1MG> tags that are included in the HTML tagged content for each ad that includes a graphic element.
>
> [0041] At the end of a preset time period elapsed since the last such update was executed, DB Manager commences an ad set update procedure that involves the notifications and communications with the Shopping Site server described above. Subject to the preset accumulation periods imposed by UpdateManager, the update execution period imposed by DB Manager, transmission and receipt delays

> for HTTP conversations and FTP transfers, and system latency in processing the requests involved, the modified ad sets containing and giving effect to new or (if permitted) corrected or withdrawn ads will become available in real time or near-real time for display in response to requests received by the Shopping Site server.

These paragraphs do not relate to the inclusion of a "placeholder for the requested service data" in a portion of a web page as claimed. In addition, although paragraph 0041 refers to a "preset time period," the referenced paragraphs do not involve "a failure of [a] service to return the service data within a selected time interval" as claimed. Rather, the "present time period" referenced in paragraph 41 refers to a time period before a database manager notifies a server of certain database updates. *See* Miller at paragraphs 0017-0019. Thus, the referenced paragraphs do not support the rejection.

As explained in connection with claim 1, the rejection is also improper because the Final Office Action does not identify a reason for combining Hayton and Miller. In this regard, the "updates" referenced in Miller are updates to a database, and not updates to the display of a page. Thus, one skilled in the art would not have considered adding the referenced teaching of Miller to Hayton.

Dependent Claim 9

The rejection of claim 9 is improper in view of the claim's dependency from claim 1. In addition, the rejection of claim 9 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 9: "the placeholder for the requested service data is included within the first portion of the web page in response to a server decision to defer rendering of a portion of the web page, said server decision being based at least in part on response time data collected for the service."

The Final Office Action at page 5 asserts that Miller teaches this feature at paragraphs 40 and 41. Both paragraphs are reproduced above. As explained above, the referenced paragraphs of Miller do not relate to the inclusion of a "placeholder for the requested service data" in a portion of a web page as claimed. In addition, the referenced paragraphs do not teach "a server decision to defer rendering of a portion of the web page" as claimed, much less such a server decision that is "based at least in part on response time data collected for the service." Thus, the referenced paragraphs of Miller do not support the rejection.

Dependent Claim 10

The rejection of claim 10 is improper in view of the claim's dependency from claim 1. In addition, the rejection of claim 10 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 10: "the placeholder for the requested service data is included within the first portion of the web page in response to a server decision to defer rendering of a portion of the web page, said server decision taking into consideration at least one of the following: (a) a load level of the service, (b) a load level of a web server system that responds to the page request."

The Final Office Action at pages 5 and 6 points to col. 13, lines 5-50 of Hayton in connection with this claim. Neither this nor any other portion of Hayton, however, teaches "a server decision to defer rendering of a portion of the web page," much less such a server decision that takes into consideration one or more of the recited criteria. Thus, the referenced portion of Hayton does not support the rejection.

Dependent Claim 16

The rejection of claim 16 is improper in view of the claim's dependency from claim 1. In addition, the rejection of claim 16 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 16: "the page update handler selects a display format to use to display the service data in the web page based at least in part on a dimension of a window of the web browser running on the user computer." The Final Office Action at page 6 points to col. 17, lines 29-40 of Hayton in connection with this feature. The referenced portion of Hayton does not involve the selection of a display format by an update handler, much less a selection of a display format that is "based at least in part on a dimension of a window of the web browser" as claimed. Thus, the referenced portion of Hayton does not support the rejection.

Dependent Claim 68

The rejection of claim 68 is improper in view of the claim's dependency from claim 1 (via intervening claim 67). In addition, the rejection of claim 68 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 68: "wherein dynamically generating the first portion of the web page comprises incorporating into the web page a viewable status message reflecting that additional data is being retrieved."

The Final Office Action at page 7 points to paragraphs 46, 47 and 50-57 of Miller in support of the rejection of claim 68. The referenced paragraphs, however, do not disclose the incorporation into a page of a viewable status message as claimed.

Dependent Claim 69

The rejection of claim 69 is improper in view of the claim's dependency from claim 1. In addition, the rejection of claim 69 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 69: "the service request is sent from the server to the service before any portion of the requested web page is transmitted to the user computer."

In connection with this claim, the Final Office Action at pages 7 and 8 points to the following portions of Hayton: Figs. 2a and 2b; col. 5, lines 29-50; and col. 6, lines 26-54. The referenced portions of Hayton, however, involve page updating tasks that are performed only after the requested web page has been transmitted to the user's computer. Thus, even if, *arguendo*, these page updating tasks involve a service request that is sent from the server to a service, this service request is not sent "before any portion of the requested web page is transmitted to the user computer" as claimed.

Independent claim 18

Claim 18 reads as follows, with emphasis added:

> A method of responding to a request from a web browser for a web page, the method comprising:
>
> sending a service request to a service to request service data to be displayed within a portion of the web page, said service request sent to the service in response to the request for the web page, and before the requested web page is transmitted to the web browser;
>
> *determining whether the service returns the requested service data within a selected time interval*;
>
> *when the service returns the requested service data within the selected time interval, populating said portion of the web page with the service data prior to transmitting the web page to the web browser; and*
>
> *when the service does not return the requested service data within the selected time interval: (a) transmitting at least said portion of the web page to the web browser without the service data while the service request is pending, to thereby enable an incomplete version of the web page to be displayed by the web browser while the service data is being retrieved*, (b)

> in response to receiving the requested service data from the service, transmitting the service data to the web browser, and (c) invoking a page update handler which, when executed by the web browser, populates said portion of the web page with the service data transmitted in (b);
>
> wherein the method is performed by a server system that comprises one or more physical servers.

The rejection of claim 18 is improper at least because Hayton and Miller do not collectively teach or suggest the italicized portion of the claim in the context of the claim's other recitations. The Final Office Action does not directly address these portions of the claim. Instead, the Final Office Action merely asserts that the limitations of claims 18-26 and 50 are "substantially the same as those in claims 1-6, 8-14, 16, 17, 49 and 67." Final Office Action at page 8.

Indeed, Hayton and Miller do not collectively teach or suggest a method that involves "determining whether the service returns the requested service data within a selected time interval," much less a method in which the process used to generate the requested page depends on the outcome of such a determination.

In addition, Hayton and Miller do not collectively teach or suggest "when the service does not return the requested service data within the selected time interval: (a) transmitting at least said portion of the web page to the web browser without the service data while the service request is pending, to thereby enable an incomplete version of the web page to be displayed by the web browser while the service data is being retrieved." Indeed, Hayton never suggests that any portion of the requested page is transmitted "without the service data while the service request is pending," or that "an incomplete version of the web page [is] displayed by the web browser while the service data is being retrieved." Instead, when a page is initially requested, Hayton's system apparently generates and returns a compete page with all of the requested data. Thus, if the server encounters a significant delay in retrieving some of this data, the user will experience a corresponding delay before any portion of the requested page is viewable.

The rejection of claim 18 is also improper because the Final Office Action does not identify a motivation for combining Hayton and Miller. In connection with this issue, the Final Office Action at page 5 points to paragraph 40 of Miller, and states that Miller is in "the same field of endeavor." Neither paragraph 40 nor any other portion of Miller, however, teaches the updating of a displayed web page. In this regard, the "updates" referenced in paragraph 40 of Miller are updates to a database, and not updates to a display of a page. Thus, even if, *arguendo*, the teachings of paragraph 40 of Miller could somehow be added to Hayton's system, the Final Office Action does not identify a motivation for doing so.

In view of the forgoing, the Final Office Action does not establish a prima facie case of obviousness with respect to claim 18.

Dependent claims 19-22, 25, 26 and 50

Claims 19-22, 25, 26 and 50 depend directly or indirectly from, and stand or fall with, claim 18.

Dependent Claim 23

The rejection of claim 23 is improper in view of the claim's dependency from claim 18. In addition, the rejection of claim 23 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 23: "the page update handler populates the portion of the web page with the service data before the web page has finished loading." The Final Office Action does not address this feature.

Dependent Claim 24

The rejection of claim 24 is improper in view of the claim's dependency from claim 18. In addition, the rejection of claim 24 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 24: "the page update handler selects a display format to use to display the service data in the web page based at least in part on a size of a window of the web browser." The portions of Hayton cited in support of the rejection of claim 16, namely col. 17, lines 29-40, do not involve the selection of a display format by an update handler, much less a selection of a display format that is "based at least in part on a size of a window of the web browser" as claimed.

Independent claim 27

Claim 27 reads as follows, with emphasis added:

> A method of generating a web page in response to a request from a web browser, the method comprising:
>
> (a) sending a service request to a service to request service data to be displayed in the web page;

> (b) *while the service request is pending, transmitting to the web browser at least a first portion of the web page, said first portion including content that is viewable within the web browser while the service data is being retrieved*;
>
> (c) after the service responds to the service request by returning the service data, sending the service data to the web browser; and
>
> (d) instructing the web browser to execute a page update handler that, when executed, incorporates a viewable representation of the service data, as transmitted in (c), into the first portion of the web page to complete the web page;
>
> wherein the method, including (a), (b), (c) and (d), is performed by a web server system that comprises one or more physical servers, and *the method enables a user to view an incomplete version of the web page while the service data is being retrieved.*

The rejection of claim 27 is improper at least because Hayton and Miller do not collectively teach or suggest the italicized features in the context of the claim's other recitations. The Final Office Action does not directly address these portions of the claim. Instead, the Final Office Action at page 8 merely asserts that the limitations of claims 27-31, 3-37, 39-43, 51 and 70 are "substantially the same as those in claims 1-6, 8-14, 16, 17, 49, 67 and 69."

Indeed, Hayton and Miller do not collectively teach or suggest a method that involves transmitting "at least a first portion of the page" to the browser "while the service request is pending" in the context of the other recitations of the claim. The Final Office Action apparently relies on Hayton in connection with this feature. The Final Office Action does not, however, point to any teaching in Hayton of a service request that is pending while the page, or a portion of the page, is transmitted from the server to the browser.

Hayton and Miller also fail to collectively teach or suggest a method that "enables a user to view an incomplete version of the web page while the service data is being retrieved." The Final Office Action apparently relies on Hayton in connection with this feature. Nothing in Hayton, however, suggests the display of an "incomplete version of the web page while the service data is being retrieved." In this regard, although Hayton's system may update the original version of a web page as displayed on the user's computer, this does not make the original version of the page "incomplete."

To the extent the rejection of claim 27 may be based in part on Miller, the rejection is also improper because the Final Office Action does not identify a motivation for combining Hayton and Miller. In connection with this issue, the Final Office Action at page 4 points to paragraph 40 of Miller, and states that Miller is in "the same field of endeavor." Neither paragraph 40 nor any other portion of Miller, however, teaches the updating of a displayed page. In this regard, the "updates" referenced in paragraph 40 of Miller are updates to a database, and not updates to a display of a page. Thus, one skilled in the art would not have considered adding the referenced teaching of Miller to Hayton.

In view of the forgoing, the Final Office Action does not establish a prima facie case of obviousness with respect to claim 27.

Dependent claims 30, 31, 33, 34, 39, 40, 43 and 51

Claims 30, 31, 33, 34, 39, 40, 43 and 51 depend directly or indirectly from, and stand or fall with, claim 27.

Dependent Claims 28 and 29

The rejection of claim 28 is improper in view of the claim's dependency from claim 27. In addition, the rejection of claim 28 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 28: "the first portion of the web page includes a display object that is initially displayed without the service data, and which is subsequently populated with the service data by the page update handler." The Final Office Action does not appear to address this feature.

Claim 29 depends from, and stands or falls with, claim 28.

Dependent Claim 35

The rejection of claim 35 is improper in view of the claim's dependency from claim 27. In addition, the rejection of claim 35 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 35: "at least step (d) is performed in response to a failure of the service to return the requested service data within a selected time interval." The Final Office Action appears to rely on paragraphs 40 and 41 of Miller in connection with this feature (*see* rejection of claim 8). The referenced portions of Miller, however, do not teach or suggest "a failure of the service to return the requested service data within a selected time interval," much less the performance of the recited step in response to such a failure. Thus, the referenced portions of Miller do not support the rejection.

Dependent Claim 36

The rejection of claim 36 is improper in view of the claim's dependency from claim 27. In addition, the rejection of claim 36 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 36: "at least step (d) is performed in response to a server decision to defer rendering of a portion of the web page, said server decision being based at least in part on response time data collected for the service." The Final Office Action appears to rely on paragraphs 40 and 41 of Miller in connection with this feature (*see* rejection of claim 9). The referenced portions of Miller, however, do not teach or suggest "a server decision to defer rendering of a portion of the web page" as claimed, much less such a server decision that is "based at least in part on response time data collected for the service." Thus, the referenced paragraphs of Miller do not support the rejection.

Dependent Claim 37

The rejection of claim 37 is improper in view of the claim's dependency from claim 27. In addition, the rejection of claim 37 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 37: "step (d) is performed in response to a server decision to defer rendering of a portion of the web page, said server decision taking into consideration at least one of the following: (1) a load level of the service, (2) a load level of a web server system that responds to the request from the web browser."

The Final Office Action appears to rely on col. 13, lines 5-50 of Hayton in connection with this claim. *See* rejection of claim 10. Neither this nor any other portion of Hayton, however, teaches "a server decision to defer rendering of a portion of the web page," much less such a server decision that takes into consideration one or more of the recited criteria. Thus, the referenced portion of Hayton does not support the rejection.

Dependent Claim 41

The rejection of claim 41 is improper in view of the claim's dependency from claim 27. In addition, the rejection of claim 41 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 41: "step (c) comprises sending the service data to the web browser in a substantially unformatted form to reduce a quantity of data transmitted to the web browser, wherein the page update handler adds format coding to the service data to incorporate the viewable representation of the service data into the web page."

The Final Office Action appears to rely on col. 13, lines 6-50 of Hayton in connection with this feature. *See* rejection of claim 4. Although the referenced text discloses replacing a portion of a page with "newly transmitted HTML output," it never suggests that this newly transmitted HTML output is sent "in a substantially unformatted form to reduce a quantity of data transmitted to the web browser" or that a page update handler "adds format coding" to such output. Thus, the referenced portion of Hayton does not support the rejection.

Dependent Claim 42

The rejection of claim 42 is improper in view of the claim's dependency from claim 27. In addition, the rejection of claim 42 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 42: "the page update handler selects a display format to use to display the service data in the web page based at least in part on a dimension of a window of the web browser."

The Final Office Action appears to rely on col. 17, lines 29-40 of Hayton in connection with this feature. *See* rejection of claim 16. The referenced portion of Hayton, however, does not involve the selection of a display format by an update handler, much less a selection of a display format that is "based at least in part on a dimension of a window of the web browser" as claimed.

Dependent Claim 70

The rejection of claim 70 is improper in view of the claim's dependency from claim 27. In addition, the rejection of claim 70 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 70: "sending the service request from the web server system to the service in response to the request from the web browser, and before any portion of the web page is transmitted to the web browser."

The Final Office Action appears to rely on the following portions of Hayton in connection with claim 70: Figs. 2a and 2b; col. 5, lines 29-50; and col. 6, lines 26-54. *See* rejection of claim 69. The referenced portions of Hayton, however, involve page updating tasks that are performed only after the requested page has been transmitted to the user's computer. Thus, even if, *arguendo*, these page updating tasks involve a service request that is sent from the web server system to a service, this service request is not sent "before any portion of the web page is transmitted to the web browser" as claimed. Thus, the referenced portions of Hayton do not support the rejection.

Independent claim 52

Claim 52 reads as follows, with emphasis added:

> A system for responding to web page requests, the system comprising:
>
> a web server system that comprises one or more physical servers, said web server system responsive to page requests from browsers running on user computing devices by generating and serving web pages that include data retrieved from one or more services, *said web server system operative to respond to a request from a browser for a web page according to a process that comprises:*
>
> *sending a service request to a service to request service data to be displayed in the web page;*
>
> *while the service request is pending, transmitting to the browser at least a first portion of the web page, said first portion including content that is viewable with the browser while the service data is being retrieved;*
>
> *after the service responds to the service request by returning the service data, sending the service data to the browser; and*
>
> *causing the browser to execute a page update handler that, when executed, causes a viewable representation of the service data to be incorporated into the first portion of the web page to complete the web page.*

The rejection of claim 52 is improper at least because Hayton and Miller do not collectively teach or suggest the italicized portion of the claim in the context of the claim's other recitations. The Final Office Action does not directly address the italicized portion of the claim. Instead, the Final Office Action at page 8 merely asserts that the limitations of claims 52-55, 57-60, 62-66 and 71 are "substantially the same as those in claims 1-6, 8-14, 16, 17, 49, and 67-69."

Indeed, Hayton and Miller do not collectively teach or suggest a system that transmits "at least a first portion of the page" to the browser "while the service request is pending" in the context of the other recitations of the claim. The Final Office Action apparently relies on Hayton in connection with this feature. The Final Office Action does not, however, point to any teaching in Hayton of a service request that is pending while the page, or a portion of the page, is transmitted from the server system to the browser.

The recitation "to complete the web page" at the end of the claim provides an additional distinction over Hayton and Miller. As explained above, the page updates in Hayton merely replace existing content of the already-completed page, and thus do not complete the page as claimed.

To the extent the rejection of claim 52 may be based in part on Miller, the rejection is also improper because the Final Office Action does not identify a motivation for combining Hayton and Miller. In connection with this issue, the Final Office Action at page 4 points to paragraph 40 of Miller, and states that Miller is in "the same field of endeavor." Neither paragraph 40 nor any other portion of Miller, however, teaches the updating of a displayed page. In this regard, the "updates" referenced in paragraph 40 of Miller are updates to a database, and not updates to a display of a page. Thus, one skilled in the art would not have considered adding the referenced teaching of Miller to Hayton.

For at least these reasons, the rejection of claim 52 is improper.

Dependent claims 54, 55, 57, 58, 60-62 and 64-66

Claims 54, 55, 57, 58, 60 and 62-66 depend directly or indirectly from, and stand or fall with, claim 52.

Dependent Claim 53

The rejection of claim 53 is improper in view of the claim's dependency from claim 52. In addition, the rejection of claim 53 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 53: "the web server system is operative to cause the browser (a) to initially display a display object on the web page without the service data, and (b) to subsequently populate the display object with the service data via execution of the page update handler." The Final Office Action does not address this feature.

Dependent Claim 59

The rejection of claim 59 is improper in view of the claim's dependency from claim 52. In addition, the rejection of claim 59 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 59: "the web server system is operative to selectively invoke said process based on a programmatic determination that is dependent upon a response time of said service."

The Final Office Action appears to rely on paragraphs 40 and 41 of Miller in connection with this claim. *See* rejection of claim 9. The referenced paragraphs of Miller simply do not teach or suggest the feature at issue, and thus do not support the rejection.

Dependent Claim 63

The rejection of claim 63 is improper in view of the claim's indirect dependency from claim 52. In addition, the rejection of claim 63 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 63: "the page update handler comprises executable code for selecting, based at least in part on a dimension of a window of the browser, a display format to use to display the service data in the web page."

The Final Office Action appears to rely on col. 17, lines 29-40 of Hayton in connection with this feature. *See* rejection of claim 16. The referenced portion of Hayton, however, does not involve the selection of a display format by an update handler, much less a selection of a display format that is "based at least in part on a dimension of a window of the browser" as claimed. Thus, the referenced portion of Hayton does not support the rejection.

Dependent Claim 71

The rejection of claim 71 is improper in view of the claim's dependency from claim 52. In addition, the rejection of claim 71 is improper because Hayton and Miller do not collectively teach or suggest the following feature recited in claim 71: "the web server system is operative to send the service request to the service before transmitting any portion of the web page to the browser."

The Final Office Action appears to rely on the following portions of Hayton in connection with claim 71: Figs. 2a and 2b; col. 5, lines 29-50; and col. 6, lines 26-54. *See* rejection of claim 69. The referenced portions of Hayton, however, involve page updating tasks that are performed only after the requested page has been transmitted to the user's computer. Thus, even if, *arguendo*, these page updating tasks involve a service request that is sent to a service, this service request is not sent "before transmitting any portion of the web page to the browser" as claimed. Thus, the referenced portions of Hayton do not support the rejection.

2. Claim 7 is improperly rejected over Hayton, Miller and Starkey.

Dependent claim 7 stands rejected under 35 U.S.C. § 103(a) over Hayton in view of Miller and further in view of Starkey. Final Office Action at pages 8 and 9. The rejection is improper at least because Starkey does not overcome the above-noted deficiencies of Hayton in view of Miller as applied to claim 1, from which claim 7 depends. The Final Office Action does not contend otherwise.

3. Claims 15, 38 and 61 are improperly rejected over Hayton, Miller and Samar.

Dependent claims 15, 38 and 61 stand rejected under 35 U.S.C. § 103(a) over Hayton in view of Miller and further in view of Samar. The rejections of these claims are improper at least because Samar does not overcome the above-noted deficiencies in Hayton in view of Miller as applied to the respective base claims, namely claims 1, 27 and 52. The Final Office Action does not contend otherwise.

VIII. CONCLUSION

For the reasons explained above, Appellant respectfully submits that the rejections of Claims 1-31, 33-43, 49-55 and 57-71 are improper and requests that these rejections be reversed.

Please charge any additional fees that may be required now or in the future to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: January 3, 2011

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CLAIMS APPENDIX

1. A method of dynamically generating and serving web pages, the method comprising:

receiving a page request at a server, the page request generated by a web browser running on a user computer and corresponding to a web page that is generated dynamically;

in response to the page request, sending a service request from the server to a service to request service data to incorporate into the web page;

before the service returns the service data, transmitting a first portion of the web page from the server to the user computer for display by the web browser, said first portion including viewable content that is viewable on the user computer while the service request is pending, and including a placeholder for the requested service data, said first portion transmitted to the user computer while said service request is pending;

after the service returns the service data and before the web page has been fully loaded, transmitting from the server to the user computer a second portion of the web page, the second portion including the service data; and

transmitting to the user computer a page update handler which, when executed by the web browser, incorporates the service data included within the second portion of the web page into the first portion of the web page in a viewable format to complete the web page;

whereby the method enables an incomplete version of the requested web page to be viewed on the user computer while the service data is being retrieved.

2. The method of Claim 1, wherein the placeholder comprises a display object, and the page update handler populates the display object with at least some of the service data included within the second portion of the web page.

3. The method of Claim 2, wherein the display object is positioned above at least some of said viewable content within the first portion of the web page.

4. The method of Claim 1, wherein the service data is included in the second portion of the web page in a condensed form in which at least some format coding is omitted, and the

page update handler adds format coding to the service data to format the service data for display, whereby a quantity of data transmitted to the web browser is reduced.

5. The method of Claim 1, wherein the service data is included in the second portion of the web page in a hidden format.

6. The method of Claim 1, wherein the page update handler is transmitted to the user computer as part of the first portion of the web page.

7. The method of Claim 1, wherein the page update handler is transmitted to the user computer as part of a library file, separately from the web page.

8. The method of Claim 1, wherein the placeholder for the requested service data is included within the first portion of the web page in response to a failure of the service to return the service data within a selected time interval.

9. The method of Claim 1, wherein the placeholder for the requested service data is included within the first portion of the web page in response to a server decision to defer rendering of a portion of the web page, said server decision being based at least in part on response time data collected for the service.

10. The method of Claim 1, wherein the placeholder for the requested service data is included within the first portion of the web page in response to a server decision to defer rendering of a portion of the web page, said server decision taking into consideration at least one of the following: (a) a load level of the service, (b) a load level of a web server system that responds to the page request.

11. The method of Claim 1, wherein the second portion of the web page includes a command that causes the web browser to execute the page update handler.

12. The method of Claim 1, wherein the first portion of the web page includes a command that causes the web browser to execute the page update handler upon completion of loading of the web page.

13. The method of Claim 1, wherein the page update handler comprises a JavaScript function.

14. The method of Claim 1, wherein the service request is one of a plurality of service requests generated in response to the page request.

15. The method of Claim 1, wherein the page update handler incorporates the service data into the first portion of the web page as mouse-over text that is displayed by the web browser when a mouse cursor is positioned over a corresponding display element.

16. The method of Claim 1, wherein the page update handler selects a display format to use to display the service data in the web page based at least in part on a dimension of a window of the web browser running on the user computer.

17. The method of Claim 1, wherein the page update handler selects a display format to use to display the service data in the web page based at least in part on a quantity of the service data.

18. A method of responding to a request from a web browser for a web page, the method comprising:

sending a service request to a service to request service data to be displayed within a portion of the web page, said service request sent to the service in response to the request for the web page, and before the requested web page is transmitted to the web browser;

determining whether the service returns the requested service data within a selected time interval;

when the service returns the requested service data within the selected time interval, populating said portion of the web page with the service data prior to transmitting the web page to the web browser; and

when the service does not return the requested service data within the selected time interval: (a) transmitting at least said portion of the web page to the web browser without the service data while the service request is pending, to thereby enable an incomplete version of the web page to be displayed by the web browser while the service data is being retrieved, (b) in response to receiving the requested service data from the service, transmitting the service data to the web browser, and (c) invoking a page update handler which, when executed by the web browser, populates said portion of the web page with the service data transmitted in (b);

wherein the method is performed by a server system that comprises one or more physical servers.

19. The method of Claim 18, wherein the page update handler incorporates the service data into the portion of the web page above other viewable content included in the portion of the web page.

20. The method of Claim 18, wherein the service data is transmitted to the web browser as part of the web page, and is moved or copied to the portion of the web page by the page update handler.

21. The method of Claim 18, wherein the service data is transmitted to the web browser within a separate web page within a hidden window.

22. The method of Claim 18, wherein invoking the page update handler comprises including, within the web page portion transmitted in (a), a command that causes the web browser to execute the page update handler upon completion of loading the web page.

23. The method of Claim 18, wherein the page update handler populates the portion of the web page with the service data before the web page has finished loading.

24. The method of Claim 18, wherein the page update handler selects a display format to use to display the service data in the web page based at least in part on a size of a window of the web browser.

25. The method of Claim 18, wherein the page update handler selects a display format to use to display the service data in the web page based at least in part on a quantity of the service data.

26. A web server system configured to respond to page requests from web browsers according to the method of Claim 18.

27. A method of generating a web page in response to a request from a web browser, the method comprising:

(a) sending a service request to a service to request service data to be displayed in the web page;

(b) while the service request is pending, transmitting to the web browser at least a first portion of the web page, said first portion including content that is viewable within the web browser while the service data is being retrieved;

(c) after the service responds to the service request by returning the service data, sending the service data to the web browser; and

(d) instructing the web browser to execute a page update handler that, when executed, incorporates a viewable representation of the service data, as transmitted in (c), into the first portion of the web page to complete the web page;

wherein the method, including (a), (b), (c) and (d), is performed by a web server system that comprises one or more physical servers, and the method enables a user to view an incomplete version of the web page while the service data is being retrieved.

28. The method of Claim 27, wherein the first portion of the web page includes a display object that is initially displayed without the service data, and which is subsequently populated with the service data by the page update handler.

29. The method of Claim 28, wherein the display object is positioned above at least some of said content within the first portion of the web page.

30. The method of Claim 27, wherein step (c) comprises transmitting the service data as part of the web page before the web page has finished loading.

31. The method of Claim 27, wherein step (c) comprises transmitting the service data to the web browser as part of a secondary web page that is loaded by the web browser within a hidden window and is accessed by the page update handler.

32. (Canceled)

33. The method of Claim 27, wherein step (d) comprises including within the first portion of the web page a command that causes the web browser to execute the page update handler upon completion of loading the web page.

34. The method of Claim 27, wherein step (d) comprises including with the service data transmitted in step (c) a command that causes the web browser to execute the page update handler.

35. The method of Claim 27, wherein at least step (d) is performed in response to a failure of the service to return the requested service data within a selected time interval.

36. The method of Claim 27, wherein at least step (d) is performed in response to a server decision to defer rendering of a portion of the web page, said server decision being based at least in part on response time data collected for the service.

37. The method of Claim 27, wherein step (d) is performed in response to a server decision to defer rendering of a portion of the web page, said server decision taking into

consideration at least one of the following: (1) a load level of the service, (2) a load level of a web server system that responds to the request from the web browser.

38. The method of Claim 27, wherein the page update handler incorporates the service data into the first portion of the web page as mouse-over text that is displayed by the web browser when a mouse cursor is positioned over a corresponding display element.

39. A web server system configured to perform the method of Claim 27.

40. (Original) A web page generated according to the method of Claim 27 represented within a computer memory.

41. The method of Claim 27, wherein step (c) comprises sending the service data to the web browser in a substantially unformatted form to reduce a quantity of data transmitted to the web browser, wherein the page update handler adds format coding to the service data to incorporate the viewable representation of the service data into the web page.

42. The method of Claim 27, wherein the page update handler selects a display format to use to display the service data in the web page based at least in part on a dimension of a window of the web browser.

43. The method of Claim 27, wherein the page update handler selects a display format to use to display the service data in the web page based at least in part on a quantity of the service data.

44-48: (Canceled)

49. The method of Claim 1, wherein the method is performed by a web server system that comprises one or more physical servers.

50. The method of Claim 18, wherein the method additionally comprises the server system responding to said request from the web browser by dynamically generating said portion of the web page using data retrieved from at least one additional service.

51. The method of Claim 27, wherein the method additionally comprises the web server system responding to said request from the web browser by dynamically generating said first portion of the web page using data retrieved from at least one additional service.

52. A system for responding to web page requests, the system comprising:

a web server system that comprises one or more physical servers, said web server system responsive to page requests from browsers running on user computing devices by generating and serving web pages that include data retrieved from one or more services, said web server system operative to respond to a request from a browser for a web page according to a process that comprises:

sending a service request to a service to request service data to be displayed in the web page;

while the service request is pending, transmitting to the browser at least a first portion of the web page, said first portion including content that is viewable with the browser while the service data is being retrieved;

after the service responds to the service request by returning the service data, sending the service data to the browser; and

causing the browser to execute a page update handler that, when executed, causes a viewable representation of the service data to be incorporated into the first portion of the web page to complete the web page.

53. The system of Claim 52, wherein the web server system is operative to cause the browser (a) to initially display a display object on the web page without the service data, and (b) to subsequently populate the display object with the service data via execution of the page update handler.

54. The system of Claim 52, wherein the web server system is operative to send the service data to the browser as part of the web page before loading of the web page by the browser is complete.

55. The system of Claim 52, wherein the web server system is operative to send the service data as part of a secondary web page that is accessed by the page update handler.

56. (Canceled)

57. The system of Claim 52, wherein the web server system is operative to cause the browser to execute the page update handler by including, within the first portion of the web page,

a command that instructs the browser to execute the page update handler upon completion of loading of the web page.

58. The system of Claim 52, wherein the web server system is operative to cause the browser to execute the page update handler by sending to the browser, with the service data, a command that instructs the browser to execute the page update handler.

59. The system of Claim 52, wherein the web server system is operative to selectively invoke said process based on a programmatic determination that is dependent upon a response time of said service.

60. The system of Claim 52, wherein the web server system comprises computer storage that stores the page update handler, and the web server system is operative to send the page update hander to the browser.

61. The system of claim 60, wherein the page update handler comprises browser-executable code for incorporating the service data into the first portion of the web page as mouse-over text that is displayed by the browser when a mouse cursor is positioned over a corresponding display element.

62. The system of claim 60, wherein the page update handler comprises browser-executable code for adding format coding to the service data to incorporate the viewable representation of the service data into the web page.

63. The system of claim 60, wherein the page update handler comprises executable code for selecting, based at least in part on a dimension of a window of the browser, a display format to use to display the service data in the web page.

64. The system of claim 60, wherein the page update handler comprises JavaScript code.

65. The system of claim 52, wherein the web server system is additionally programmed to respond to the request from the browser by dynamically generating the first portion of the web page using data retrieved by the web server system from at least one additional service.

66. The system of Claim 65, wherein the web server system is operative to incorporate into said first portion of the web page a viewable status message reflecting that additional data is being retrieved.

67. The method of claim 1, wherein the method additionally comprises responding to the page request by dynamically generating the first portion of the web page on said server using data retrieved from at least one additional service.

68. The method of claim 67, wherein dynamically generating the first portion of the web page comprises incorporating into the web page a viewable status message reflecting that additional data is being retrieved.

69. The method of claim 1, wherein the service request is sent from the server to the service before any portion of the requested web page is transmitted to the user computer.

70. The method of claim 27, wherein the method comprises sending the service request from the web server system to the service in response to the request from the web browser, and before any portion of the web page is transmitted to the web browser.

71. The system of claim 52, wherein the web server system is operative to send the service request to the service before transmitting any portion of the web page to the browser.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None